Lesson 1

Overview of Public Health Surveillance

Instructor's Guide Form

Lesson Title: Overview of public health surveillance

Lesson Goal: For each learner to understand the definition and purposes of public health surveillance.

Learning Objectives: By the end of this lesson, the learner will be able to :

1) define the elements of public health surveillance;

2) describe the categories of public health surveillance;

3) describe the purposes of public health surveillance;

4) describe the uses of public health surveillance data; and

5) list future considerations and challenges for public health surveillance.

Equipment and Materials Needed:

• Overhead projector

• Transparencies #1.1 - #1.18

Time Required: 45 minutes

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Instructor's Guide Form
(continued)

Synopsis of Lesson: This lesson introduces the concept of public health surveillance to the learners. It provides learners with an overview of the elements of surveillance including the definition, goals/objectives, uses, and process of public health surveillance.

Adult Education Application: Rather than reviewing the content related to the core elements of surveillance and the purposes of public health surveillance data, you can query the students for what they think the core elements and purposes are. You can either engage them in a discussion about each of these types and/or record their responses on an overhead slide. Following these discussions, you can summarize their ideas and use the prepared overhead slides to reinforce the core areas and the main purpose of surveillance data.
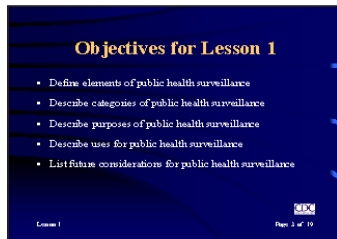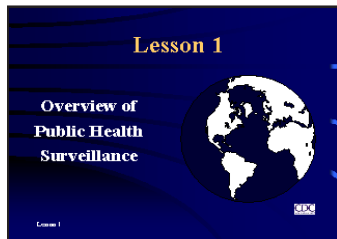
Lesson 1

Overview of Public Health Surveillance

Topical Outline

I.   Present state of public health surveillance
A. Core elements
B. Use of surveillance in public health practice

II.   Public health surveillance data
A. Purposes of surveillance data
B. Uses of surveillance data

III. Overview of future of public health surveillance
A. Contributing factors
B. Critical challenges

Lesson 1

Overview of Public Health Surveillance

Content Outline

Lesson Objectives:
- **Define elements of public health surveillance**
- **Describe categories of public health surveillance**
- **Describe purposes of public health surveillance**
- **Describe uses of public health surveillance**
- **List future considerations for public health surveillance**

I. Public health surveillance

A. Core elements

1. There are many definitions of surveillance, however, most public health professionals agree that surveillance is the regular, ongoing:
   a. collection;
   b. analysis;
   c. interpretation; and
   d. dissemination of data

2. However, if a program is to be a vital public health surveillance program, it must be tied to a public health action

3. Many methods are available to accomplish each component (these will be discussed as we introduce each element)

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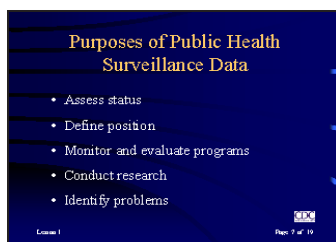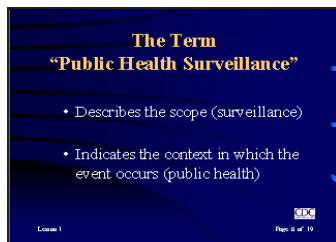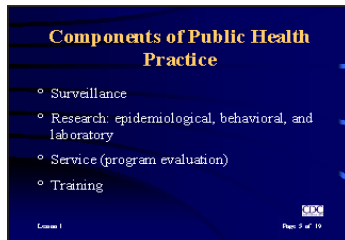
B. Components of public health practice

   1. The components include:
        a. surveillance
        b. research: epidemiological, behavioral, and laboratory
        c. service (including program evaluation)
        d. training

   2. these components support each other

   3. surveillance data should be used to identify research and service needs, which, in turn, help to define training needs

   4. the act of surveillance does not encompass epidemiological investigations or services

   5. the term epidemiologic cannot appropriately be used to modify surveillance

   6. the term public health surveillance:
        a. describes the scope (surveillance)
        b. indicates the context in which the event occurs (public health)

   7. officials responsible for the health of the population are dependent on surveillance because of the focus on providing
        a. information for public health action
        b. a mechanism to evaluate control / prevention programs

II. Public health surveillance data
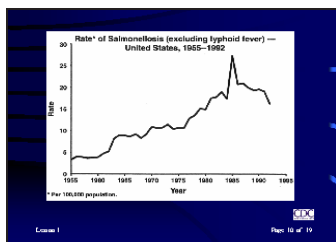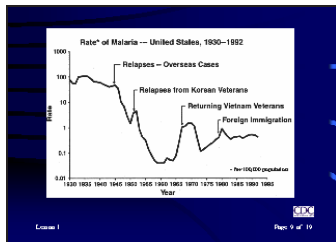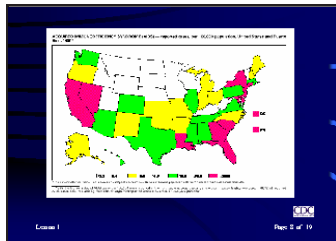
A. Purposes of public health surveillance data

   1. assess public health status

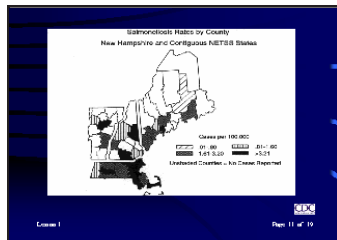   2. define public health priorities

3. monitor and evaluate programs

4. conduct research

5. identify problems

B. Uses of surveillance data

1. provides quantitative estimates of the magnitude of a health problem

2. portrays the natural history of disease
   a. illustrated by the surveillance of malaria rates in the U.S. since 1930
       b. in the 1940s, malaria was an endemic health problem in the southeastern U.S. to the degree that persons with fever were often empirically treated for malaria unless further diagnostic tests were available
   c. surveillance that included slide confirmation showed that what had been reported as malaria frequently was not malaria (slide confirmation had not been performed and thus the number of surveillance cases dropped)
   d. the general downward trend in reported cases of malaria continued with temporary increases in the 1950's and 1960's related to returning armed forces personnel from Southeast Asia.
   e. cases have continued to increase due to immigration and U.S. citizens traveling abroad.

3. detection of epidemics
   a. illustrated by identifying cases of swine influenza (1976)
   b. example: Salmonella enteritis

4. documentation of the distribution and spread of a health event
    a. illustrated by salmonella rates in New Hampshire
    b. be aware of differences in data collection systems in different jurisdictions
5. facilitating epidemiologic and laboratory research
    a. U.S. cancer mortality statistics have been mapped at the county level to identify a variety of geographic patterns that suggest hypotheses on etiology and risk
    b. recognition of clusters can lead to further epidemiologic or laboratory research
    c. county mapping of nasal cancer prevalence parallels county map of industries in which formaldehyde is used in 10% or more of work forces
6. testing of hypotheses
    a. U.S.P.H.S. measles elimination program initiated in 1978
    b. new state laws excluded students from school who had not been vaccinated
    c. CDC anticipated a change in age pattern of persons reported to have measles
    d. before program, highest reported rates were for children, 10-14 years old
    e. after school exclusion policy was implemented
        1) there was a general decrease in the number of cases
        2) shift in peak occurrence from school-age to preschool-age

7. evaluation of control and prevention measure

    a. introduction of inactivated poliovirus vaccine in the U.S. in 1950s was followed by a dramatic decrease in the reported number of cases of paralytic poliomyelitis
    b. introduction of oral poliovirus vaccine in 1960s was followed by a further decline
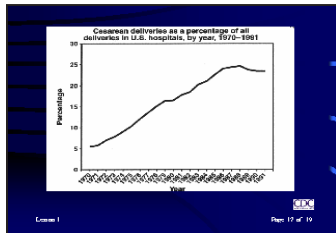
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8. monitoring of changes in infectious agents

    a. antibiotic-resistant gonorrhea was introduced into U.S. from Asia

    b. surveillance enabled public health officials to monitor the spread of this strain

    c. these data facilitated treatment and prevention activities

9. detection of changes in health practice

    a. surveillance data can provide information regarding use of various technologies in health care

    b. in the U.S. since 1965, rate of cesarean delivery has increased

    c. data are useful in planning research

    d. data are useful in monitoring impact of such changes in practice and procedure on outcomes and costs associated with health care

10. planning

    a. data on refugees entering the U.S. from S.E. Asia included

        1) where people settled

        2) their age and gender structure

        3) their health problems

    b. data helped health officials plan appropriate health services, control, and preventive activities for this new population

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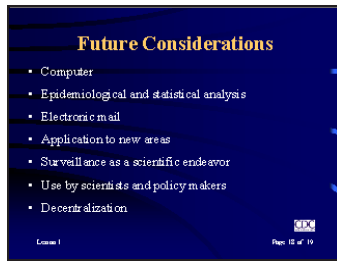
III. Overview of the future of public heath surveillance

  A.   Contributing factors to future of public health surveillance

      1. role of the computer

           a. National Electronic Telecommunications System for Surveillance (NETSS) currently links all state health departments by computer for the routine collection, analysis, and dissemination of data on notifiable health conditions

           b. growth will occur within states, with state health departments being linked to county health departments and possibly even to health-care providers' offices for routine surveillance

      2. increasingly more sophisticated statistical analysis

      3. increased use of electronic media for the dissemination of surveillance data

      4. increased application of surveillance concepts to new areas of public health practice such as chronic disease, environmental and occupational health, and injury control

      5. increasing use by scientists of public health surveillance data

      6. increased use of surveillance by policymakers at all levels

      7. decentralization allowing access to and use of data at all levels including communities, counties, states, etc. where action should occur
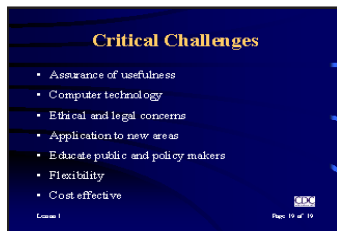
B. Critical challenges

1.   assurance of the usefulness of public health surveillance
  a. must have rigorous evaluation of public health surveillance systems
  b. surveillance must be regarded as a scientific endeavor
  c. the user must understand the use of surveillance data, its application in decision making, and its role in identifying research opportunities
  d. the system must be accessible to all levels of public health professionals.

2. computer technology for efficient data collection, analysis, and graphic display must be applied

3. ethical and legal concerns must be addressed effectively

4. surveillance principles must be applied to emerging areas of public health

5. educate public and policymakers on the use, role, and importance of public health surveillance

6. be flexible to changes in public health practice

7. justifications based on cost-effectiveness and resource considerations

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